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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,636	07/28/2006	Tomoyuki Yoshimi	5404/164	2829
757 7590 12/23/2008 BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610				
EXAMINER				
TESKIN, FRED M				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
12/23/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/587,636

**Applicant(s)**

YOSHIMI ET AL.

**Examiner**

Fred M. Teskin

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date 20061013; 20060728
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

**Detailed Action**

This Office action is responsive to application filed on July 28, 2006, accompanied by a preliminary amendment, which has been entered. Claims 1-6 are currently pending and under examination.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3320220 (DiDrusco), alone or in light of the evidence provided by Chi (US 3258453).

Claimed invention is a method for preparing an isobutylene resin powder from a solution containing an isobutylene polymer, comprising the steps of:

(1) adding a surfactant and water to the solution and removing a solvent by heating while stirring the mixture to cause liquid-liquid dispersion; and then

(2) removing a remaining solvent and a remaining monomer by steam stripping to form a resin powder, wherein the steam stripping is performed at a temperature ranging from 150°C to less than 180°C.

DiDrusco is directed to a process for separating solvent and/or unreacted liquid monomer from a polymerization reaction solution comprised of elastomeric polymer or copolymer, which includes the steps of (1) converting the solution to an aqueous emulsion and, after heating to a temperature above 100°C, (2) spraying the emulsion through suitable nozzles with superheated steam in a stripper, to obtain fine particles of elastomeric (co)polymer (col. 1, lines 28+; col. 2, lines 1-3 and col. 5, lines 34-35). In the working examples (e.g., Example 1) the emulsion is prepared by adding to a hydrocarbon solution of ethylene/propylene copolymer, water containing about 0.1 % of the emulsifying agent Aerosol OT (sodium 2-ethyl-hexylsulfosuccinate). This emulsifying agent is a well-known anionic surfactant as evidenced by Chi (see col. 5, lines 58+ where sulfonates including sodium dioctyl and di(2-ethylhexyl) sodium sulfosuccinate are listed as exemplary anionic surfactants). DiDrusco differs from the claimed invention in that in his specific embodiments, the emulsion is formed from ethylene-propylene copolymers and the stripper is operated at a temperature of 99°C. However, DiDrusco expresses preference for heating the emulsion to 120°C to 160°C,

before it is sent to the nozzle (leading into stripper 12; see drawing). When using a high boiling solvent in the polymerization, an ordinarily skilled practitioner would have been inclined to heat the emulsion to a temperature at the higher end of the preferred range, e.g., 160°C, prior to feeding it into the nozzle along with the superheated steam, thereby providing a stripping temperature within the range claimed. Furthermore, butyl rubber (isoprene/isobutene copolymer) is identified as a synthetic (co)polymer to which the DiDrusco process may be used advantageously in separating from a solution thereof (col. 3, lines 48-54). Motivated by an expectation of achieving a comparable degree of solvent separation, it would have been obvious to one of ordinary skill in the art at the time of the invention to subject an isobutylene polymer such as butyl rubber to the process of DiDrusco as performed at a steam stripping temperature within the range instantly claimed.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiDrusco as applied to claims 1 and 3 above, and further in view of any one of Rath (US 5910550), Kowalski (US 4508592) and JP 2002-161109.

DiDrusco suggests filtration of the aqueous dispersion of fine particles obtained from the spraying step (col. 5, lines 1-5), but does not disclose drying the resulting powder. The claimed drying step is, however, a conventional procedure for removing solvent from polyisobutene, isobutene copolymers and isobutylene-based block copolymers as shown by the secondary art. Thus, Rath teaches (col. 6, lines 13-30) devolatilization in an extruder as the final step in working-up the polymerization mixture

of a cationic polymerization of isobutene. Kowalski teaches a method for extrusion drying of wet crumb particles as having applicability to synthetic elastomers including butyl rubber and polyisobutylene (col. 2, lines 25+ and col. 5, lines 65-68). JP '109 discloses (see Abstract) a method for removing organic solvent and manufacturing pellet-shaped resin from a solution of isobutylene-based block copolymer by conveying the solution through an evaporation apparatus of twin-screw structure. As both DiDrusco and the secondary art relate to solvent separation of isobutylene-based polymers, it would have been obvious to one of ordinary skill in the art to subject the filtered aqueous dispersion of DiDrusco to an additional step of drying in an extruder as disclosed by Rath, Kowalski or JP '109, in the expectation of realizing a further reduction in level of residual solvent in the extruded polymer.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiDrusco in combination with Kennedy et al (US 4946899).

DiDrusco is applied as in the preceding rejections. DiDrusco lacks a disclosure of a block copolymer as per claim 5 and a mixed solvent as per claim 6 as solvent for the isobutylene polymer. Kennedy et al disclose block copolymer comprising a polyisobutylene rubbery segment and a polystyrene hard segment (corresponding to the (A) and (B) blocks in claim 5), produced in a mixed solvent according to claim 6. See Kennedy et al at column 5, lines 8-12 and Example XVII, detailing production of an isobutylene/styrene block copolymer in a methyl cyclohexane/methyl chloride mixed solvent. It would have been obvious to subject the block copolymer solution produced

per Kennedy et al to the separation process of DiDrusco as performed at a steam stripping temperature ranging from 150°C to less than 180°C, since the DiDrusco process is broadly taught as applicable to separating elastomeric olefin (co)polymers (col. 1, lines 10-15) and, thus, one of ordinary skill in the art would have expected a comparable degree of solvent separation to obtain upon applying that process to the solution of rubbery segment-containing block copolymer disclosed by Kennedy et al.

Claim 2 is objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim. The use in step (1) of the claimed process of a surfactant having a cloud point as defined in claim 2 is not disclosed nor adequately suggested in the available prior art.

Any inquiry concerning this communication should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred M Teskin/

Primary Examiner, Art Unit 1796

FMTeskin/12-18-08